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Concentration of analytes on the probe in an electrothermal atomizer

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Abstract

To increase the sensitivity of the atomic-absorption analysis, we suggest concentrating the analytes on a tungsten probe through multiple fractional condensation of the sample vapor obtained in a graphite atomizer. This technique makes it possible to additionally reduce the matrix interference. To this end, a sample with a high interference level is preliminarily diluted to the level eliminated by the stage of fractional condensation and then concentrated on the probe. The influence of potassium sulfate on the Pd, Cd, and Ag absorption has been reduced by a factor of 1.5-4.5 and that of sodium chloride - by a factor of 4-300 compared to the influences in the longitudinally heated atomizer with a platform, a modifier, and a background corrector based on the Zeeman effect. In a number of cases, advantages over the transversely heated atomizer have been attained.

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Keywords

Electrothermal atomic-absorption spectrometry, Fractional concentration, Matrix interference, Refractory probe